REMARKS/ARGUMENTS

Reconsideration of the application is requested.

Claims 1-19 remain in the application. Claims 1-7 are subject to examination and claims 8-19 have been withdrawn from examination.

In "Claim Rejections - 35 USC § 103", item 5 on pages 3-4 of the above-identified Office Action, claims 1-7 have been rejected as being obvious over European Patent Application 0 583 87 A1 to Cho et al. (hereinafter Cho) in view of International Publication No. WO 97/07876, corresponding to U.S. Patent No. 5,974,789, to Mathes et al. (hereinafter Mathes) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their original form and, therefore, the claims have not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful. Claim 1 calls for, *inter alia*, a process for selective catalytic reduction of nitrogen oxides in an oxygen-containing gaseous medium, which comprises:

conducting a carrier gas through a preparation reactor disposed outside a stream of a gaseous medium;

introducing a substance to be converted into reducing agent into the carrier gas and converting the substance into reducing agent in the preparation reactor, and thereby supplying energy for a thermal conversion with the carrier gas;

adding the reducing agent to the gaseous medium upstream of a reduction catalytic converter and reducing nitrogen oxides in the gaseous medium; and

branching off a portion of the carrier gas after having passed through the preparation reactor and feeding back the portion to the preparation reactor.

Thus, in pertinent part, the invention of the instant application as claimed calls for introducing a substance (18) to be converted into reducing agent into a carrier gas and converting the substance (18) into reducing agent in a preparation reactor (10), and branching off a portion of the carrier gas after having passed through the preparation reactor (10) and feeding back the portion to the preparation reactor (10).

The Cho reference discloses a method of vaporizing aqueous reducing agent for reducing NOx in flue gas in a combustion system. Cho shows a steam generator 10 having a furnace 12 from which flue gas travels through a flue 20. The flue 20 contains a heat exchanger 68, an injection grid 76 downstream

of the heat exchanger 68 and an SCR catalytic reactor 40 downstream of the injection grid 76. A tank 50 is provided for storing an aqueous reducing agent which is fed to an atomizing nozzle 66 of a vaporization vessel 64. Atomizing air is fed through a control valve 67 to the atomizing nozzle 66. Heated air from the heat exchanger 68 vaporizes the aqueous reducing agent in the vaporization vessel 64. The vaporized aqueous reducing agent, such as ammonia, is injected into the flue 20 with the injection grid 76. It is assumed that the Examiner is equating the vaporization vessel 64 of Cho with the preparation reactor 10 of the instant application.

However, there is no disclosure in Cho of feeding a portion of the vaporized aqueous reducing agent after having passed through the vaporization vessel 64, back to the vaporization vessel 64. Clearly, Cho does not show the step of "branching off a portion of the carrier gas after having passed through the preparation reactor and feeding back the portion to the preparation reactor" as recited in claim 1 of the instant application.

The Examiner agrees with this shortcoming of the Cho reference in the third paragraph on page 3 of the Office action.

However, the Examiner is of the opinion that the Mathes reference provides the missing "feeding back" step.

The Mathes references discloses a method and device for decomposing nitrogen oxides in the exhaust gas of an internal combustion engine. Mathes provides a compressor 8 feeding compressed air 1' to an internal combustion engine 2. Exhaust gas a from the engine 2 is fed through a turbine 10 connected to the compressor 8 and on to an exhaust gas purification device 20. The device 20 has an SCR catalytic converter 21 and an upstream spraying device 22. A bifurcation 26 diverts a part d of the air 1' through a line 28 to the spraying device 22. Aqueous urea r is also fed to the spraying device 22 for injection. It is assumed that the Examiner is equating the spraying device 22 of Mathes with the preparation reactor 10 of the instant application, since the spraying device 22 is where the aqueous urea r is brought into contact with the compressed air d.

However, there is no disclosure in Mathes of feeding a portion of the vaporized aqueous reducing agent after having passed through the spraying device 22, back to the spraying device 22. Clearly, Cho does not show the step of "branching off a portion of the carrier gas after having passed through the preparation reactor and feeding back the portion to the

preparation reactor" as recited in claim 1 of the instant application.

The Examiner's statement in the fourth paragraph on page 3 of the Office action that a part of the compressed air is diverted and used as compressed air for injecting the reactant, is true. However, that is not what is claimed in the instant application. Rather, claim 1 of the instant application calls for "introducing a substance to be converted into reducing agent into the carrier gas and converting the substance into reducing agent in the preparation reactor" as well as feeding back "after having passed through the preparation reactor". Clearly, Mathes does not provide such a feedback which could only occur in Mathes if the feedback were to occur from a point downstream of the spraying device 22 to a location upstream of the spraying device 22.

Thus the step of "branching off a portion of the carrier gas after having passed through the preparation reactor and feeding back the portion to the preparation reactor", which is recited in claim 1 of the instant application and is at the heart of the invention of the instant application, is in no way taught or suggested by either of the references or a combination thereof.

In addition, the advantages which are connected with this step should be noted. These are namely that on one hand, in this way the carrier gas is already pre-warmed by the recirculation and only a small amount of energy is necessary for the thermal decomposition of the aqueous urea solution into ammonia. On the other hand, due to this measure, ammonia accumulates in the carrier gas.

Mathes does not even pertain to the conversion of a urea solution into ammonia **prior** to the injection in an exhaust gas line. Instead, the immediate injection of the urea solution r in the exhaust gas flow is provided by compressed air d. Mathes pertains to motor vehicle technology and provides, as an essential element, that a part of the air for the motor which is compressed by a turbocharger branches off through the line 28 and is used as compressed air for the injection of the urea solution. This measure has the advantage that no separate compressed air system is necessary for the injection of the reduction agent r.

A processing reactor in which the aqueous urea solution is converted into ammonia can thus not be found in Mathes. In particular, it can also not be seen from Mathes that the branched-off compressed air partial flow is **fed back** and guided in a circuit or loop. A feeding back of the compressed

air according to Mathes also does not make any sense from a technical point of view. Instead, it would be disadvantageous because the compressed air - due to the compression - has a higher temperature and a feeding back would lead to a further undesirable temperature increase.

A combination of the two references would, at best, lead to feeding the compressed air - which according to Mathes is branched off downstream of a compressor that is present anyway - to the valve 67 of Cho. When applied to the instant application, this would mean that, at best, it would be obvious to replace the compressor 35 of the instant application with the device disclosed by Mathes. However, it does at all follow how a person of skill in the art, with a combination of these two references, would be encouraged to branch off the carrier gas fed through the preparation reactor 10 prior to feeding it into the exhaust gas channel **and to feed the carrier gas back again.**

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims are believed to be patentable as well because they all are ultimately dependent on claim 1.

In view of the foregoing, reconsideration and allowance of claims 1-7 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time is required, petition for extension is herewith made. Any extension fee associated therewith should be charged to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Please charge any other fees that might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner and Greenberg, P.A., No. 12-1099.

Respectfully submitted,

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For Applicants
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